

# Noxious Weeds and the Oriental Bittersweet Eradication Program

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**N**oxious weeds have grave impact on forest, farmland, and private residences.

Ecologically, noxious weeds out-compete native plants and contribute to decreasing plant and animal biodiversity. Economically, they can cause losses that exceed \$13 billion per year in the United States ([www.mda.state.mn.us/plants/badplants/noxiousweeds.aspx](http://www.mda.state.mn.us/plants/badplants/noxiousweeds.aspx)). Surveying and controlling noxious weeds when they are still in isolated pockets, and before they spread is necessary to save Minnesota's valuable public and private lands.

## What are “noxious weeds”?

A noxious weed is defined by the [Minnesota Noxious Weed Law](#) (MS 18.77; Subd. 8) as an annual, biennial, or perennial plant that the Commissioner of Agriculture designates to be injurious to public health, the environment, public roads, crops, livestock, or other property. Minnesota currently has a noxious weed list, which ranks the plants according to the risk they pose.

**Prohibited noxious weeds** must be eradicated or controlled in accordance with the Minnesota Noxious Weed Law. These species cannot be sold, propagated or illegally transported in Minnesota. There are two lists of [Prohibited Noxious Weeds](#): the Eradicate and Control lists. By law, eradication means that all above and below ground plant parts must be destroyed. Controlling noxious weeds means that methods preventing the maturation and spread of propagating parts should be implemented. **Restricted noxious weeds** may not be sold, transported without a permit, or intentionally planted in Minnesota.

Finally, there is the **specially regulated plant list**. This list includes species that are native and are problematic to humans, animals or production systems, or are non-native. In certain situations, the regulated plant can be useful, if maintained in a proper manner. Each specially regulated plant has a management-specific plan that guides its regulation. For example, poison ivy (*Toxicodendron radicans* and *T. rydbergii*) is a native species currently listed in Minnesota as a specially regulated plant and has a management-specific plan that states it shall be controlled or eradicated for public safety along rights-of-way, trails, public accesses, business properties open to the public, or on parts of lands where public access for business or commerce is granted. It must also be eradicated or controlled along property borders when requested by adjoining landowners.

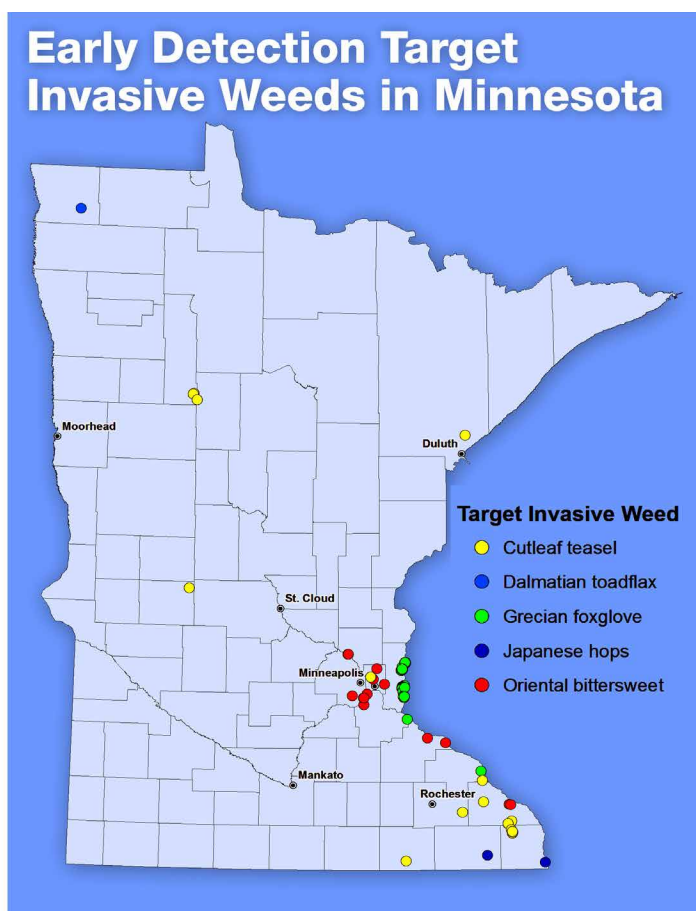
Because noxious weeds can cause problems by moving into valuable ecosystems and displacing native plants, it is important to know and recognize them. By outcompeting native plants, noxious weeds



decrease our natural plant and animal biodiversity throughout the state. Quite often the insects and diseases that might keep these weeds under control in their native habitats do not exist in Minnesota, and this means the weeds can grow and spread quickly. Noxious weeds also negatively impact farmland by diminishing resources, which results in more land needed to raise the same amount of cattle or crops.

## Noxious Weed Eradication Program

Identifying and eradicating small infestations is one of the best ways to control noxious weeds. The Minnesota Department of Agriculture (MDA) Noxious and Invasive Weed Program (NIWP) was developed to assist with management and enforcement of noxious weeds statewide. Each county in the state is responsible for noxious weed law enforcement. The NIWP assists local government and landowners with resources for managing noxious weeds and provides enforcement training and legal assistance to counties, townships and cities. The Minnesota Noxious Weed Advisory Committee (NWAC) works closely with MDA to advise and assist with determining which noxious weeds to target for eradication. Targeted weeds for eradication typically exist in small areas and are not widespread throughout the state. Measures must also be taken to prevent and exclude these species from being introduced into Minnesota.



In 2013, MDA and partners received funding from the Environment and Natural Resource Trust Fund to begin a statewide project on public and private lands to target five plant species on the eradicate list: *Celastrus orbiculatus* (Oriental bittersweet), *Digitalis lanata* (Grecian Foxglove), *Humulus japonicus* (Japanese Hops), *Linaria dalmatica* (Dalmatian Toadflax), and *Dipsacus laciniatus* (Cut-leaved Teasel). These species are being systematically detected, surveyed, and entered into a mapping database. MDA and collaborators use the Early Detection and Distribution Mapping System ([www.eddmaps.org](http://www.eddmaps.org)) to report noxious weeds. Once the noxious weeds are mapped, Conservation Corps Minnesota (CCM) crews, using the survey maps, can begin the eradication process on the infested sites. Landowners will monitor treated areas and report to MDA for three years following the initial control.

## Oriental Bittersweet Eradication Program

One species of special interest to those who own and work with trees and forests is Oriental bittersweet, a woody vine with colorful red fruit that has become invasive in isolated pockets of woods and residential areas. Oriental bittersweet is a prohibited noxious weed on the eradicate list. It was first classified as a noxious weed in Minnesota in 2011, and efforts to eradicate the plant have been ongoing since then. Oriental bittersweet is

one of the five noxious weeds targeted for eradication before it proliferates and becomes widespread throughout the state. MDA is working to detect, survey, control, and monitor Oriental bittersweet to protect forest and grassland habitats.

Understanding how Oriental bittersweet can spread is an important part of the eradication program. Its persistent red fruit is consumed by birds, which spread the seed to uninfested areas. People trained to look for forest pests, and Oriental bittersweet in particular, may look for places where birds perch. The areas beneath the perches may have Oriental bittersweet seedlings, juvenile vines, or mature woody vines and would be a place to target control efforts.

Humans also spread Oriental bittersweet infestations by physically moving the plants. Oriental bittersweet was commonly propagated and sold in Minnesota through nurseries and retail garden centers before 2010. It was also used for holiday wreaths and cut stem arrangements by the floral industry, increasing its spread throughout the state.



Red fruit with yellow capsules of Oriental bittersweet



Leaves and immature summer fruit of Oriental bittersweet



Red fruit and orange capsules of American bittersweet

## Oriental Bittersweet Description

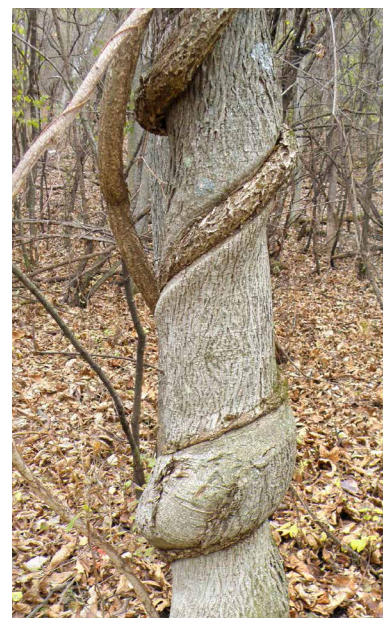
Identifying the noxious weeds on the target eradicate list helps the state move closer to its goal of stopping the spread of invasive plants. Oriental bittersweet is a deciduous woody perennial plant which grows as a climbing vine and a trailing shrub. The leaves are alternate, glossy, with finely toothed margins. There are separate female (fruiting) and male (non-fruiting) plants. Female plants produce clusters of small greenish flowers, and each plant can produce large numbers of fruits and seeds. The fruits are yellow, globular capsules that at maturity split open to reveal three red-orange, fleshy fruit that contain three to six seeds. The abundance of showy fruits has made Oriental bittersweet extremely popular for use in floral arrangements.

American bittersweet (*Celastrus scandens*) is a very similar native plant that may be distinguished from Oriental bittersweet by the location of its fruit: Oriental bittersweet has small clusters in the leaf axils, while American bittersweet has clusters at its branch tips. The color of American bittersweet fruit is also different from Oriental bittersweet. American bittersweet has orange seed capsules and red fruit, and Oriental bittersweet has yellow seed capsules with red fruit. The two species may be capable of hybridizing, and since the native is relatively rare, it is possible that its distinct genetic identity is threatened.

Despite its ornamental characteristics, Oriental bittersweet is an ecological threat to forests, grasslands, and parks in Minnesota. The vines twine around trees, girdling them in a snake-like fashion. Oriental bittersweet can reach forest canopies, shading the trees and understory and preventing native plant species from flourishing. Infestations can become so thick that wildlife, such as deer, can have difficulty navigating through wooded areas filled with Oriental bittersweet.

Oriental bittersweet infestations can have costly impacts on homeowners as well. Large Oriental bittersweet vines become heavy and can break tree branches and trunks, especially in combination with heavy snow. These broken branches and trunks present numerous hazards for people, whether on public or private land. In some areas, broken trees, caused by the weight of Oriental bittersweet vines, have fallen on houses and buildings and caused damage to properties. The hazardous conditions make management and control difficult for inexperienced landowners, who require the assistance of trained professionals.

Because of its destructive nature, an increasing number of states are regulating Oriental bittersweet as a



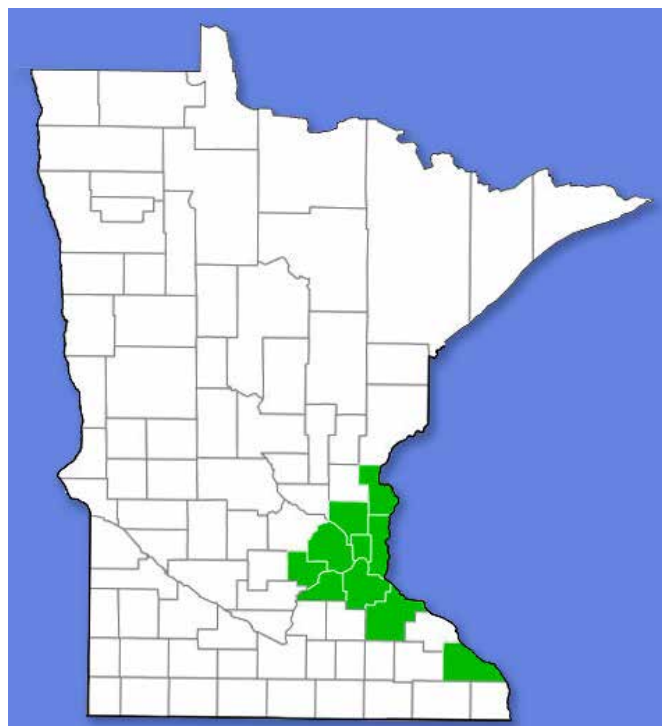
Oriental bittersweet vines growing into and girdling a tree trunk.



noxious weed: Connecticut, Massachusetts, Minnesota, New Hampshire, North Carolina, Vermont, and Wisconsin. In many eastern states, Oriental bittersweet has become so prolific that the native species, American bittersweet, has become more scarce and threatened.

## Where in Minnesota has Oriental bittersweet been found?

Though recently added to the Noxious Weed List in Minnesota, pockets of Oriental bittersweet have been growing in the state for at least 20 years. The largest infestation sites are located in Winona, Red Wing, Stillwater, and Elm Creek Park Reserve in Osseo, with



scattered infestations throughout the Twin Cities Metro area. Survey and management of these areas are in the beginning stages, with plans to continue eradication of Oriental bittersweet throughout 2014. Working groups have been formed with representatives from MDA, University of Minnesota, Minnesota Department of Transportation, city foresters, county resource managers and agricultural inspectors, soil and water conservation districts, Winona State University, Master Gardeners, green industry representatives, National Park Service and U.S. Fish and Wildlife partners. The groups are working together to manage target invasive species. Meetings have also been held with landowner groups in Winona and Red Wing to discuss the eradication process. View [Oriental bittersweet distribution](#) through EddMapS.

There is no doubt that the forests of Minnesota are important to the communities that reside near them. To lose vast swaths of forests to a pest such as Oriental bittersweet means that our forests lose economic and ecological value, which in turn negatively affects the communities near them. Making an effort to eradicate Oriental bittersweet while it is still located in isolated pockets means that we have a chance to preserve valuable forests and become good stewards of the land for us and for future generations.

*Map of counties in Minnesota with confirmed reports of Oriental Bittersweet*

## Eradication of Oriental Bittersweet

There are a number of eradication methods that can be used for Oriental bittersweet. Mechanical control by hand-pulling may be used for small plants or seedlings, while taking care to remove the entire root of the plant to prevent re-sprouting. Mowing will stimulate re-sprouting and is not recommended unless an herbicide is also applied. Prescribed fire for live vines is also not recommended as it will also stimulate re-sprouting; however, burning cut and dried vines is a good way to dispose of vines and fruit.

According to University of Wisconsin Extension recommendations, the most effective form of eradication for Oriental bittersweet requires the use of an herbicide with the active ingredients triclopyr or glyphosate. Application methods include foliar, cut stump and basal bark treatments. Specific control recommendations are available at the Invasive Plant Control Database [mipncontroldatabase.wisc.edu/](http://mipncontroldatabase.wisc.edu/)

As a tree care professional, there are several things you can do if you see Oriental bittersweet. If an infestation is on a client's property, you may wish to bring the Oriental bittersweet to the client's attention and discuss management options.

1. Note the exact location.
2. If it is possible, take a digital photo.
3. Contact MDA's "Arrest the Pest" hotline: Voicemail 888-545-6684 or email [Arrest.The.Pest@state.mn.us](mailto:Arrest.The.Pest@state.mn.us)



Additionally, you can become a Forest Pest First Detector. First Detectors receive updated information regarding present and emerging forest pests. Workshops are scheduled around the state and the schedule can be found at [www.myminnesotawoods.umn.edu/forest-pest-first-detector/](http://www.myminnesotawoods.umn.edu/forest-pest-first-detector/)

The eradication of noxious weeds requires collaboration from many groups of people to be successful. With the help of trained professionals, volunteers, and working groups, we can eliminate target species before they cause irreversible ecological and economic damage.

To learn more about the Minnesota Department of Agriculture's Noxious and Invasive Species Program and the Noxious Weed Law and Lists, please visit: [www.mda.state.mn.us/weedcontrol](http://www.mda.state.mn.us/weedcontrol)

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In accordance with the Americans with Disabilities Act, this information is available in alternative forms of communication upon request by calling 651-201-6000. TTY users can call the Minnesota Relay Service at 711 or 1-800-627-3529. The MDA is an equal opportunity employer and provider.



*Broken branches and trees  
caused by the weight of Oriental bittersweet*